Listing of Claims:

This listing of claims will replace all prior versions, and listing, of claims in the application.

1. (Currently Amended) An optically-pumped laser device, comprising:

a nonionic base layer having an upper surface and a lower surface, a surface area of said lower surface being greater than a surface area of said upper surface; ~~and~~

an ionic layer having a top surface and a bottom surface, said bottom surface being attached to said upper surface of said nonionic base layer through an optical-quality interface, a cross-section through said device in a direction perpendicular to said interface having a trapezoidal shape, parallel lines of said trapezoidal shape being parallel to said interface; and

wherein output energy from said laser device makes multiple reflections between said top surface of said ionic layer and said lower surface of said nonionic base layer such that said output energy makes multiple passes through said optical-quality interface.

2. (Original) The laser device of claim 1, wherein said optical-quality interface is a diffusion-bonded interface.

3. (Original) The laser device of claim 1, wherein said optical-quality interface is a layer-growth type interface.

4. (Allowed - Previously Presented) An optically-pumped laser device, comprising:

a nonionic base layer; and

an ionic layer attached to said nonionic base layer through an optical-quality interface, a cross-section through said device in a direction perpendicular to said interface having a trapezoidal shape, wherein all cross-sections passing through said optical-quality interface in a direction perpendicular to said interface have a trapezoidal shape.

5. (Currently Amended) An optically-pumped laser device, comprising:

a nonionic base layer; ~~and~~

an ionic layer attached to said nonionic base layer through an optical-quality interface, ~~a cross-section through said device in a direction perpendicular to said interface having a trapezoidal shape, wherein~~ said nonionic base layer and said ionic layer form a laser slab; ~~, said laser slab having~~

a bottom surface located on said nonionic base layer;

a top surface located on said ionic surface, said optical-quality interface being located between said top surface and said bottom surface, output energy of said laser device reflecting between said bottom surface and said top surface such that said output energy passes through said optical-quality interface; and

two side surfaces extending between said top and bottom surfaces, an angle between said side surfaces and said bottom surface being about 60° such that a cross-section

through said device in a direction perpendicular to said optical-quality interface has a trapezoidal shape.

6. (Original) The laser device of claim 1, wherein said nonionic layer is a YAG layer and said ionic layer is a Yb:YAG layer having a ytterbium concentration of about 15%.

7. (Cancelled)

8. (Original) The laser device of claim 1, wherein said ionic layer has an isolation groove.

9. (Withdrawn) A method for producing laser light output, comprising:

providing a laser slab having a nonionic layer and an ionic layer attached thereto via an optical-quality interface, a cross section through said nonionic layer of said laser slab in a direction perpendicular to said interface having a trapezoidal shape producing a bottom surface on said nonionic layer having an enlarged area relative to a top surface on said ionic layer; and

pumping said bottom surface of said laser slab with input light from a diode array.

10. (Withdrawn) The method of claim 9, wherein providing a laser slab includes providing a laser slab with the nonionic layer comprising YAG material and the ionic layer comprising Yb:YAG material.

11. (Withdrawn) The method of claim 10, wherein pumping said laser slab with input energy from a diode array includes pumping said laser slab with pulsed light having a wavelength of about 940 nm.

12. (Withdrawn) The method of claim 11, wherein said pulsed light has a peak optical power of at least about 400 W.

13. (Withdrawn) The method of claim 10, wherein pumping said laser slab with input light from a diode array includes pumping said laser slab with continuous light having a wavelength of about 940 nm.

14. (Withdrawn) The method of claim 13, wherein said continuous light has a peak optical power of at least about 240 W.

15. (Withdrawn) The method of claim 9, wherein providing a laser slab includes providing a laser slab with an ionic layer having an isolation groove.

16. (Withdrawn) The method of claim 9, wherein providing a laser slab includes providing a laser slab having a trapezoidal cross section through both said nonionic layer and said ionic layer in a direction perpendicular to said interface.

17. (Currently Amended) An optically-pumped laser slab, comprising:

a YAG layer; ~~and~~

a Yb:YAG layer attached to said YAG layer along optical-quality interface by diffusion bonding, said Yb:YAG layer having a ytterbium concentration of approximately 15%, a cross section through said laser slab in any plane perpendicular to said optical-quality interface having a trapezoidal shape; ~~, said laser slab having~~

a bottom surface;

a top surface opposite said bottom surface, said optical-quality interface being between said top and bottom surfaces, output energy of said laser slab reflecting between said bottom surface and said top surface such that said output energy passes through said optical-quality interface; and

two side surfaces extending to said top surface ~~tilted inwardly~~ from said ~~the~~ bottom surface, each of said side surfaces being at an angle of about 60° with respect to said bottom surface.

18. (Withdrawn) A method of manufacturing a laser device, comprising:

providing a nonionic layer having a bottom surface;

providing an ionic layer;

connecting the ionic layer and the nonionic layer through an optical quality interface with said nonionic layer at a position opposite said bottom surface of said nonionic layer; and

polishing at least two lateral surfaces of said nonionic layer and said ionic layer to form side surfaces, said polishing being at an angle to said optical quality interface so that a cross-section through the ionic layer and the nonionic is trapezoidal in shape, with said bottom surface of said nonionic layer having a greater surface area than said optical quality interface.

19. (Withdrawn) The method of claim 18, wherein said polishing is at an angle of approximately 60° from the optical quality interface.

20. (Withdrawn) The method of claim 18, wherein fabricating a nonionic layer comprises fabricating a YAG layer.

21. (Withdrawn) The method of claim 20, wherein fabricating an ionic layer comprises fabricating a Yb:YAG layer.

22. (Withdrawn) The method of claim 20, wherein said polishing includes polishing such that said bottom surface of said nonionic layer has a surface area approximately 3 times greater than a surface area of said optical quality interface.

23. (Withdrawn) The method of claim 18, wherein fabricating an ionic layer includes fabricating an isolation groove in said ionic layer.

24. (Withdrawn) The method of claim 18, wherein said steps of providing an ionic layer and connecting the ionic layer to the nonionic layer take place simultaneously through epitaxial growth.

25. (Withdrawn) The method of claim 18, wherein said step of connecting the ionic layer to the nonionic layer includes connecting through diffusion bonding.

26. (Allowed - Previously Presented) A laser slab for use in an optically-pumped laser, comprising:

a nonionic layer having a bottom surface and side surfaces; and

an ionic layer attached to said nonionic layer along an interface, the bottom surface of said nonionic layer having a bottom surface area greater than an interface surface area of said interface, said side surfaces of said nonionic layer funneling optical energy from said bottom surface of said nonionic layer to said interface;

wherein said laser slab comprises first and second side walls comprising said side surfaces of said nonionic layer and first and second end surfaces extending between said side walls such that light energy entering said laser slab through said bottom surface of said nonionic layer results in emitted energy from said ionic layer reflecting at least once from said bottom surface of said nonionic layer and resulting in an output beam emitted from said end surfaces.

27. (Allowed - Original) The laser slab of claim 26, wherein said surface area of said bottom surface is at least about two times greater than said interface surface area.

28. (Allowed - Original) The laser slab of claim 26, wherein a cross-section through said nonionic layer in a direction perpendicular to said interface is trapezoidal.

29. (Allowed - Original) The laser slab of claim 26, wherein said side walls are so shaped as to provide rounded profiles in a cross-section in a direction perpendicular to said interface.

30. (Allowed - Original) The laser slab of claim 26, wherein said side walls are so shaped as to provide parabolic profiles in a cross-section in a direction perpendicular to said interface.

31. (Allowed - Original) The laser slab of claim 26, wherein said ionic layer has an isolation groove.

32. (Allowed - Previously Presented): An optically-pumped laser device, comprising:

a nonionic base layer having a thickness of about 3.25 mm; and

an ionic layer attached to said nonionic base layer through an optical-quality interface and having a thickness of about 0.25 mm, a cross-section through said device in a direction perpendicular to said interface having a trapezoidal shape.

33. (Currently Amended) The laser device of claim 1 wherein ~~said ionic layer comprises a top surface, said nonionic base layer comprises a bottom surface, and~~ said laser device comprises first and second side surfaces and first and second end surfaces, said first and second end surfaces extending from said top surface of said ionic layer to said lower ~~bottom~~ surface of said nonionic base layer, said laser device accepting input optical energy through said lower ~~bottom~~ surface of said nonionic base layer and directing said input optical energy to said ionic layer such that said output energy is produced in ~~emitted from~~ said ionic layer, reflected between ~~from~~ said top surface of said ionic layer and said lower ~~bottom~~ surface of said nonionic layer, and emitted ~~in an output beam~~ from said first and second end surfaces.

34. (Currently Amended) The laser slab ~~device~~ of claim 17 wherein said Yb:YAG layer comprises said ~~a~~ top surface, said YAG layer comprises said ~~a~~ bottom surface, ~~and said laser device comprises first and second side surfaces~~ and further including first and second end surfaces, said laser slab ~~device~~ accepting input optical energy through said bottom surface of said YAG layer and directing said input optical energy to said Yb:YAG layer such that output energy is produced by ~~emitted from~~ said Yb:YAG layer, reflected between ~~from~~ said top surface of said Yb:YAG layer and said bottom surface of said YAG layer, and emitted in an output beam from said first and second end surfaces.

35. (Allowed - Previously Presented) An optically pumped laser device comprising:

a nonionic base layer having a bottom surface for accepting input optical energy;

an ionic layer adapted to accept said input optical energy and emit output optical energy, said ionic layer being attached to said nonionic base layer along an optical-quality interface, said ionic layer having a top surface opposing said bottom surface of said nonionic base layer; and

first and second side surfaces and first and second end surfaces, each of said first and second side surfaces and said first and second end surfaces extending between said bottom surface of said nonionic layer and said top surface of said ionic layer, said first and second side surfaces and said first and second end surfaces being provided at angles with respect to said bottom surface of said nonionic base layer such that a surface area of said optical interface is less than a surface area of said bottom surface of said nonionic base layer and cross-sections through said nonionic base layer and perpendicular to said optical-quality interface are trapezoidal, said output optical energy reflecting from said top surface of said ionic layer and said bottom surface of said nonionic layer and being emitted from said end surfaces.

36. (Previously Presented) The laser device of claim 1, wherein all cross-sections passing through said optical-quality interface in a direction perpendicular to said interface have a trapezoidal shape.

37. (Previously Presented) The laser device of claim 1, wherein said nonionic layer and said ionic layer form a laser slab, said laser slab having a bottom surface and two side surfaces, an angle between said side surfaces and said bottom surface being about 60°.